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category of Hilbert spaces - Hilb

(Definition)

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Definition 0.1. The [category](#) $Hilb_f$ of finite-dimensional [Hilbert spaces](#) is defined as the category whose [objects](#) are all finite-dimensional Hilbert spaces $\mathcal{H}_f$, and whose [morphisms](#) are linear maps between $\mathcal{H}_f$ spaces. The [isomorphisms](#) in $Hilb_f$ are all isometric isomorphisms.

Furthermore, one also has the following, [general definition](#) for any Hilbert space.

Definition 0.2. The *category* $Hilb$ of Hilbert spaces is defined as the category whose objects are all Hilbert spaces $\mathcal{H}$, and whose morphisms are linear maps between $\mathcal{H}$ spaces. The *isomorphisms* in $Hilb$ are all isometric isomorphisms.

Remark 0.1. The category of $Hilb$ Hilbert spaces has direct sums and is a Cartesian category.

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